ETHYL GLUCURONIDE AND ETHYL SULFATE (ETG AND ETS) ALCOHOL METABOLITE Testing in Urine

Alcohol is one of the most widely abused substances, but also one of the most difficult to monitor. Fortunately, two sensitive and specific biomarkers facilitate monitoring alcohol use. Ethyl glucuronide (EtG) and ethyl sulfate (EtS) are minor ethanol metabolites produced by the liver. They are direct biomarkers of ethanol exposure. EtG and EtS are highly sensitive, water soluble, nonvolatile metabolites that can be detected at quantifiable levels in hair, urine, oral fluid, and blood. Urine, however, is the preferred matrix for testing.

What is ethyl glucuronide? Ethyl glucuronide (EtG) is a direct metabolite of ethyl alcohol (ethanol). Its presence in urine can be used to detect recent alcohol exposure, even after ethanol is no longer measurable.

What is ethyl sulfate? Ethyl sulfate (EtS) is a specific metabolite of ethanol that is stable in urine and not subject to degradation.

What is the detection window for EtG/EtS testing? The presence of EtG/EtS can reveal very small acute doses, chronic alcohol consumption, and anything in between, from as soon as 2 hours and up to 96 hours* post-consumption, depending on the amount used and the frequency of use. Parent alcohol testing is limited to approximately 8–12 hours post-consumption.

* Published studies have shown EtG may be detected up to 96 hours after consumption, depending on quantity and frequency of exposure to alcohol.

Why test for EtG/EtS?

- Detects recent and past consumption of ethanol more accurately and for a longer period of time than standard testing. It is not, however, a test for current impairment
- Strong indicator of alcohol ingestion in the past two to three days.
- Ideal for zero-tolerance and alcohol-abstinence programs.

For more information, visit www.cordantsolutions.com, email info@cordanthts.com, or call 1-800-442-0438
EtG and EtS are not produced as a result of fermentation, and therefore they provide a way to monitor diabetic patients.

Fast results: ≤ 48 hours.

Testing is performed by sensitive and specific liquid chromatography tandem mass spectrometry (LS-MS/MS).

Testing may be performed on the same specimen used for other drug testing with Norchem lab.

Toxicologist and customer-service support, expert witness testimony, and affidavit services are available from Norchem.

How reliable is EtG/EtS testing? The presence of both EtG and EtS in body fluids indicates exposure to ethyl alcohol. Incidental exposure (from ethanol-based medication, hand sanitizers, food sources, mouthwash, etc.) could result in low-level positives for EtG, EtS, or ethanol. Patients should be provided with a list of potential sources of ethanol exposure. Excessive use of hand sanitizers (for instance, by health professionals) may cause EtG levels to exceed 500 ng/mL. (See below for information on cutoff levels.)

CUTOFF LEVELS

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<th>EtG: 500 ng/mL*</th>
<th>EtS: 100 ng/mL*</th>
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* Norchem cutoff levels are based on recommended Substance Abuse and Mental Health Services Administration (SAMHSA) cutoff values for EtG and EtS.

Screen Test: Screening is performed using enzyme immunoassay for EtG, at a cutoff of 500 ng/mL.

Confirmation Test: Confirmation testing is performed using LS-MS/MS.

Can EtG results tell me how much alcohol has been consumed? Any positive result means the liver has processed alcohol (ethanol). EtG/EtS production may vary among individuals, and because of the long detection period estimating the amount of alcohol consumed is not possible. In general, the greater the ng/mL value, the more recent and/or heavy the consumption has been.

How stable is EtG/EtS in a urine specimen?

- EtG/EtS is stable in a urine specimen for at least 7 days at room temperature, 1 month when refrigerated, and up to 12 months when frozen.
- Certain bacteria, such as E. coli, can degrade EtG but not EtS.